DOCUMENT RESUME

ED 279 182 FL 016 490

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TITLE Towards a Description of Argumentative Text Structure.
PUB DATE 84
NOTE 17p.; In: Ringbom, Hakan, Ed,; Rissanen, Matti, Ed. Proceedings from the Nordic Conference for English Studies (2nd, Hanasaari/Hanaholmen, Finland, May 19-21, 1983); see FL 016 498. Appendix contains small print.
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Classification; *Cognitive Processes; Comparative Analysis; *Discourse Analysis; *English; Linguistic Theory; *Persuasive Discourse; *Problem Solving; Rhetoric; Speech Acts; Structural Analysis (Linguistics); Writing (Composition)

ABSTRACT

The approach taken to discourse analysis that classifies text types according to isolated linguistic features is criticized, and an alternative approach to argumentative texts is proposed. This approach looks at the process of argumentation as an instance of the problem-solving process. The argumentative text is then seen as moving from the undesirable, problem state to the desirable state or solution. Written and spoken argumentation would manifest different strategies and features but would follow the same problem-solving process. Argumentative texts would also be characterized by interaction both between the author and addressee and between successive speech acts in the texts, and interactive analysis could be used for typological diagnosis of whole concrete texts. An advantage seen in interactive description of a text, as contrasted with typological definition, is that interactive sequencing helps to reveal the text's hierarchical structure and to identify representative speech acts. The concrete examples used in this paper are taken from a sample text, a copy of which is appended. (MSE)

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TOWARDS A DESCRIPTION OF ARGUMENTATIVE TEXT STRUCTURE

1. Text types as abstractions

One way of identifying text types is to give a list of isolated linguistic features which mark each type. Werlich (1976) points out five text types: descriptive, narrative, expository, argumentative and instructive, for which he specifies linguistic features. Let us compare some features of these types on the basis of what is listed in table 1.

Text type	Descriptive	Narrative	Expository	Argumentative
Dominant sentence type	Phenomenon-registering sentence, eg. 'There were thousands of glasses on the table.'	Action-recording sentence, eg. 'The passengers landed in NY in the middle of the night.'	Phenomenon-identifying and phenomenon-linking sentences, eg. 'One part of the brain is the cortex'; 'The brain has ten million neurones.'	Quality-attributing sentence, eg. 'The obsession with durability in the arts is not permanent.'
Type of embedding	Non-finite participle clauses, relative clauses, spatial clauses	Temporal clauses, non-finite participle clauses	Restrictive relative clauses, causal clauses	Causal, concessive and nominal that or whether clauses
Sequence type	Spatial	Temporal	Additive, explicatory	Contrastive
Type of text structuring	Spatial	Temporal	Analytical	Inductive, dialectical, deductive
Tense	Past/ Present	Past	Present	Present

Table 1. Examples of text typological markers

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Let us compare for instance the dominant sentence types in each of the text types. We can see that the sentence type characteristic of the argumentative text is evaluative, whereas the sentence type characteristic of the expository text is phenomenon-identifying and phenomenon-linking. Let us then compare the sequence types dominant in each of the text types. The term sequence type refers to sequences formed by successive sentences, paragraphs, chapters and so on. As table 1 shows, descriptive texts are characterized by spatial sequences; narrative texts by temporal sequences; expository texts by additive and explicatory sequences and argumentative texts by contrastive sequences.

The features listed in table 1 are merely examples of the kinds of linguistic phenomena that can be identified as markers of specific text types. On the basis of lists like this it is not difficult to point out, say, expository or argumentative passages from a concrete text. What is difficult or impossible, is the identification of a concrete text with a specific text type. Concrete texts turn out to be mixtures of text types. The notion of text type must then be understood as an abstraction.

2. About the typological assessment of concrete texts

For some practical purposes, however, it may be necessary for the reader to be able to say about a concrete text what it ultimately counts as and why. Examples of such practical purposes are the writing of abstracts and summaries, as well as the various pedagogical purposes such as the teaching of reading comprehension and the assessment of the students' written work. Decisions of whether a piece of written work is a legitimate representative of a certain textual category or whether it correctly summarizes a piece of work must in these cases be made intuitively. In textlinguistic literature, too, it is sometimes suggested that texts should be divided into types according to their overall 'illocutionary point' or 'communicative purpose' (cf. Aston 1977:470; Shaugnessy 1977 and Hatim 1983). For instance the difference between exposition and argumentation - according to this criterion - is that the point in exposition is to inform the reader, whereas the point

in argumentation is to convince him. The problem is how to tell if the point has or has not been made or if it has been made successfully.

For practical text analysis purposes, then, batteries of isolated typological markers and the notion of abstract text types are not enough. Neither is a merely intuitive assessment of the 'point' or 'purpose' of the text. We need methods for the typological definition of concrete texts. The method should reveal, for instance, whether a concrete text counts as an argumentation or as an exposition. One way of developing the method is to attempt to describe the structure prevailing in such concrete texts as are intuitively attributed to certain textual categories. In this paper an attempt is made to describe the structure of an argumentative text. The concrete examples are taken from the sample text in Appendix 1.

3. The argumentative text as a problem-solution structure

It would be ideal if the description of the argumentative text could be embedded in the description of the argumentation process. Kummer (1972:29) suggests that the process of argumentation can be described as an instance of the cognitive process of problem-solving. According to Kummer's proposal, the argumentative speaker or writer (S) assumes that the hearer or reader (H) has an undesirable 'initial position' to a state of affairs. The S's goal is to change the initial position in the H's mind so that it approaches and ultimately equals S's own view of the state of affairs. S's own view is the desirable position, the 'final position' to be established into H's mind. This goal is reached via a series of sub-goals, the single arguments of the argumentation. When argumentation is seen as a problem-solving process, the initial, undesirable state is the problem and the final, desirable state is the solution. The argumentation is the movement towards the desirable state.

According to Kummer (1972:29) it is typical of the problem-solving process in general that it 'allows changes of sub-goals or strategies within the process of solution and is not bound to

a pre-given plan.' Thus it is typical of argumentation that 'the arguments seem to be formed in the process of argumentation; they appear spontaneously and determine the further course of action towards the goal.' Further, 'the directedness of problem-solving seems to work like a magnetic field patterning the material coming within its reach.'

Spoken, spontaneous argumentation can be expected to manifest more traces of the 'original' argumentation process than written argumentative texts. We can assume that much of the spontaneity that characterizes the argumentation process on which the text is based gets deleted in the course of writing and rewriting the text. Still, even written texts have structural features that can be attributed to the original argumentation process. The basic problem-solving pattern can still be seen in the text structure. An argumentative text can be described as a sequence in which the structural units situation, problem, solution and evaluation can be identified. There are specific 'slots' in the text for the initial, undesirable state - the problem - and for the final, desirable state - the solution. The evaluation slot is reserved for the evaluation of the conjectured outcome of the suggested solution. The situation slot is reserved for background material, ie. facts and views intended for the orientation of H to the problem area.

The original argumentation process is also reflected on the written text in that the ultimate solution is not arrived at suddenly but approached gradually, through various intermediate steps. The wavelike and repetitive proceeding towards the solution in a written text gives as it were a stylized picture of the argumentation process itself, which tries out a great number of subgoals and strategies, eliminates some and pursues others until the main goal is considered to have been reached. As a result the end product, the text, is a constellation of miniature texts which all contribute to the ultimate goal, the solution. All the mini texts, however, do not touch upon the solution, ie. they do not have a solution slot at all; they merely illuminate aspects of the problem. Some mini texts, on the other hand, while relating to aspects of the problem, may also give a glimpse to the solution and possibly even its evaluation.

The problem-solution structure of the sample text (cf. Appendix 1) is outlined in figure 1 below.

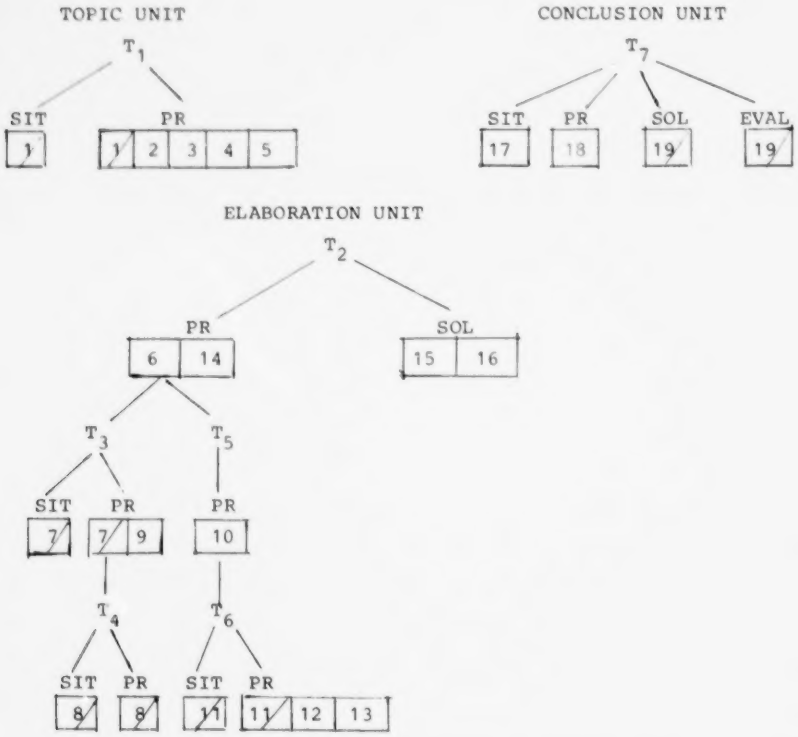

Figure 1. Problem-solution structure in sample text

The numbers in the squares refer to paragraph numbers in the text. A diagonal line across a square marks those instances in which less than a paragraph is devoted to an item. The text is divided into three global units, the topic unit, the elaboration unit and the conclusion unit, each of which consists of one or more mini texts (T_1 - T_7). The horizontal axis represents the linear progression of the text. The vertical axis represents

the level of generality/specificity of expression, or levels of macrostructure (cf. Tirkkonen-Condit 1983).

There are differences in the ways in which individual texts proceed towards the solution. In the sample text the solution is approached slowly: it is not touched upon until paragraph 15. The sample text is 'blocklike' in its overall structure. More than half of the text is devoted to aspects of the problem block, then comes the solution block and finally a recapitulation of all the main elements of the text, ie. the conclusion unit with all the items situation, problem, solution and evaluation represented. Some other texts may give glimpses into the solution earlier on; they may have mini texts with solution items scattered throughout their structure. Such texts could be described as 'wavelike' in their overall structure.

The problem-solution structure of the sample text is clearly compatible with Kummer's idea of what argumentation is all about. In the text the problem is a distortion in people's way of thinking, in their attitudes to a state of affairs, as a result of which there is a distortion in the physical reality. The solution suggested is to change these attitudes in order to change the physical reality. The distortion in attitudes is the identification of ecology and conservation with the concept of amenity. The consequence is a continued despoliation of ecological resources. The solution suggested is that amenity criteria be replaced by ecological principles.

It is not the aim of the present paper to seek further connections between the original cognitive process of argumentation and the resulting argumentative text. Nevertheless, Kummer's proposal that argumentation be treated as a specific kind of the problem-solving process is felt to be highly relevant. Kummer's proposal suggests psychological validity to the idea of assigning a problem-solution pattern to the overall structural description of an argumentative text. Argumentation is envisaged as a movement from an undesirable attitudinal position to a desirable attitudinal position - a description which fits the pattern prevalent in the subtype of argumentative texts discussed in the present paper. Although the problem-

solution structure can be assigned to other than argumentative texts, as has been shown by Hoey (1979) and by Aston (1977), the particular kind of problem-solution pattern pointed out by Kummer is typical of argumentation and not of exposition for instance. Even the notion of illocutionary point is more easy to handle if it is reviewed in the light of Kummer's proposal. We could accept the view that the illocutionary point of argumentation is to convince. But the essence of convincing seems to be just what Kummer says is the essence of the argumentative process - the attempt to change the hearer's way of thinking about a state of affairs so that it approaches and ultimately equals the speaker's own view. Thus one way of establishing whether the illocutionary point in a text is to convince would be to see whether the text manifests the particular kind of problem-solution structure which marks out argumentation. The sample text bears out the idea that argumentation takes place through several intermediate steps; in this particular text these steps are represented by the seven mini texts.

However, Kummer's proposal refers to the content of the text rather than to its linguistic features. Since the problem-solution structure is not unique to argumentative texts, a global linguistic analysis in which a text is described as a sequence of the structural units situation, problem, solution and evaluation, does not necessarily reveal the text type. We need a more detailed and yet global linguistic analysis.

4. The interactive patterns prevailing in the argumentative text

The interactive analysis suggests itself as a promising method for the typological diagnosis of whole concrete texts. The term interactive is here understood in the following two senses: (1) as referring to the interaction between the author and the addressee, and (2) as referring directly to the relationship between successive speech acts in the text.

When the term interactive is understood as referring to the interaction between the author and the addressee, we look at the text as a dialogue. We can take a sentence or a group of sen-

tences as the exponent of a speech act and imagine that at each speech act boundary the addressee asks the author a question. By filling in these imaginary questions we will find out the function of the speech act in relation to the previous speech act. We will see that in an argumentative passage a typical question is 'On what grounds are you saying this?' In a narrative passage, on the other hand, a typical question is 'What happened next?' One does not normally expect a story-teller to justify what he has said. The question technique shows us that the interaction between the author and the addressee varies according to text type.[1]

The second interpretation of the term interactive was that it refers directly to the relationship between successive speech acts in the text. The text is then treated as a monologue. This is the way Aston (1977) understands the term and also the way in which it is understood in the present paper. In this interpretation, too, the units that constitute speech acts are sentences or groups of sentences. For instance a sequence of two sentences can be described as follows: as a speech act sentence 1 is a claim and sentence 2 a statement. In relation to speech act 1, the claim, speech act 2 functions as a justification. The interactive relation of 2 to 1 is justification.

The interactive structure of the sample text has been described, and parts of the description are shown in the following. As mentioned earlier, the text divides into three global units which are called topic unit (paragraphs 1-5), elaboration unit (paragraphs 6-16) and conclusion unit (paragraphs 17-19). The interactive structure of the elaboration unit is outlined in table 2.

[1] I am grateful to Liisa Lautamatti for the observation that the term interactive could be understood as referring to the imaginary dialogue between the author and the addressee.

Claim (Assertive) Para 6 Sentences 16-18	Justification Para 7-13 Sentences 19-47		Induction (Assertive) Para 14 Sentences 48-49	Induction (Directive) Para 15-16 Sentences 50-54
	Observation I Para 7-9 Sentences 19-30	Observation II Para 10-13 Sentences 31-47		
P r o b l e m				S o l u t i o n

Table 2. Outline of the interactive structure of elaboration unit

As the sketch in table 2 shows, this text unit is composed of a sequence problem + solution. The problem consists of a sequence claim + justification + induction, and the solution consists of induction alone. The justification of the claim consists of two observations (I and II). Related to the problem-solution structure outlined earlier in figure 1, Observation I corresponds to minitext T_3 and Observation II to minitext T_5. We will next carry out a closer analysis of one part only, namely of Observation I. The interactive structure of Observation I is shown in table 3. As can be seen, we find within Observation I basically the same interactive patterns as in the problem section of the whole text unit set out in table 2. This basic structure is claim + justification + induction. The principle is first to assert a claim, then to introduce observations to justify the claim, and finally to induce, by virtue of the observation, the state of affairs that was originally claimed. Thus the contents

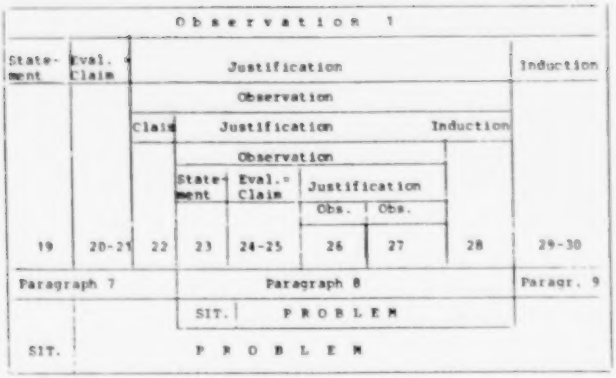

Table 3. Interactive structure of Observation I

of the original claim are as it were presented twice; first time as a claim and the second time as an induction. The states of affairs first claimed and then induced within Observation I are listed in table 4.

State of affairs	Claimed in sentence No.	Induced in Sentence No.
ECOLOGY IS NOT INTEGRATED WITH THE PLANNING PRACTICE	21	30
ECOLOGICAL MATTERS ARE SUBSUMED UNDER THE HEADING OF AMENITY	22	28
PLANNING IS TOO STATIC	22	29

Table 4. States of affairs first claimed and later induced

The claim + justification + induction sequences seem to characterize the problem sections. The solution sections consist of inductions. It is interesting to note that the inductions

made in the solution sections are 'independent' in the sense that they are not members of the type of pairs dominant in the problem sections. In other words there are no claims to match the inductions in the solution sections. The essential content in the problem section is to assert that things go wrong, ie. to assert negative evaluations. The illocutionary quality prevalent in the problem section is assertive (evaluative). The essential content of the solution section is to suggest what should be done to prevent things from going wrong. The illocutionary quality prevailing in the solution section is directly or indirectly directive.

I started my paper by criticising the kind of text typological definitions which confined themselves to listing some 'isolated' linguistic features as markers of specific text types. In what respect, if at all, is the interactive sequencing, coupled with the problem-solution analysis, superior in the typological definition of a text? Does not it provide just another linguistic criterion for telling apart text types? Does not it merely answer the question 'what are the typical interactive sequences?' in a text type. The superiority of the interactive description is that it also helps to reveal the hierarchical structure of the text. It helps to identify those speech acts in the text which best represent a section or the text as a whole. In the instance of the problem sections, the sequences at the top of the hierarchical structure turn out to be of the type claim + justification + induction. Embedded in the justification section there may be even long passages which manifest other than argumentative features. Thus the problem sections can be said to be dominated by evaluative, assertive speech acts. The solution sections in turn are dominated by directive speech acts.

It would be interesting to compare the dominant acts and sequences found in the argumentative text to those found in the expository text. It is my hypothesis that the dominant sequences in an expository text are of the type statement + explanation + deduction, or statement + explication. This would

APPENDIX 1

Environmental Conservation or Countryside Cosmetics?

by P. H. Selman

Planners are now accustomed to considering the views of ecologists in developments affecting the countryside, despite the lack of relevant planning legislation. However, official attitudes tend to confuse resource management with the preservation of amenity. This shallow treatment of ecology is reinforced by the incompatibility between the dynamic nature of biosystems and the static representations of planning proposals.

Environmental protection, ecology and natural resource management are all presently regarded as matters in which planners should rightly intervene. At the same time, however, it is generally recognised that the control of biotic resources is only tenuously linked to planning control.

Critics of town and country planners would argue that they should not be encouraged to participate in fields excluded from their auspices by the General Development Order[1] for fear that they might meddle amateurishly through lack of training or experience.

A fair justification for seeking to extend a greater degree of control to the countryside can nevertheless be made out. First, planners command a uniquely good position from which to take an overview of the cumulative results of piecemeal developments, and to weigh up the relative merits of competing claims upon rural resources. Second, in the most general sense, planners control "activities" which take place in "habitats": this is of considerable importance for wildlife conservation, especially in regard to the shift of emphasis from species preservation to habitat protection.

Despite the inclusion of "environmental impacts" on the planner's checklist, however, it would be untrue to suggest that these have been accorded any degree of equality with socio-economic issues in the development process. If any likelihood does indeed exist that we are exploiting our renewable resources beyond the point of recovery, there is very little official recognition of the fact, or of its attendant dangers.

The contention here is that planners espoused the cause of the eco-activist far too lightly, without giving sufficient attention to the implications of what they were taking on. The more respectable environmental arguments coincided conveniently with the degree of deferred gratification which a middle-class planning fraternity could afford itself. This measure of enlightened concern was, however, only sufficient to ensure that "ecology" was tacked onto the planner's long list of interests, so that some thought could officially be given to the continued despoliation of the face of the earth. The fact that ecology could radically alter the whole basis and direction of social and economic planning was hardly considered.

In this way, ecology and resource management became the new terms which described the traditional concern for the preservation of a visually pleasant countryside; they became equated with the pervasive but shallow concept of amenity, enabling this to be expressed in a new and impressive technical jargon. As David Smith[2] has commented about the amenity concept, however:

> ". . . no such idea, however subtle, could hold together a set of activities that extend beyond the control of land use and the provision of physical infrastructures to a wider concern for the social and economic welfare of the urban community through non-physical and even non-spatial policies."

Similarly, if "ecology" is equated with rural "amenity", it will remain on the fringe of planning interest, and inferior to social welfare and economic growth, rather than providing an overall context for the development of urban systems.

The Restricted Scope of Resource Planning

There appears to be a wide gulf between even the relatively conservative opinions expressed at the United Nations Conference on the Human Environment[3], and official dogmas as they work out in practice.

mean that the illocutionary quality would be stative. (It can be mentioned in passing that the situation sections of argumentative texts seem to be stative in their illocutionary quality. Since the sample text has very few and very short situation sections, it is not worth pursuing this matter here.) In expository texts directive acts would probably be rare or missing.

Factual prose texts often have summaries at the beginning or at the end of the text. These summaries can be expected to legitimately represent the text as a whole, especially if they are parts of the text and written by the author himself. An interactive and problem-solution analysis of these parts of the text should according to my position turn out a diagnosis of the text type. These summaries can of course also be observed in terms of what I called isolated typological markers. We can expect to find also these markers accumulated in the top material.

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Sample text: Selman, P.H. "Environmental Conservation or Countryside Cosmetics?" The Ecologist 6, 9.

Although ecology is readily upheld as being a subject worthy of general attention, it has failed to capture the imagination of the politicians and professionals who govern land use policy. Even the more limited objective of containing the loss of agricultural land has failed if we are to believe the preliminary findings of the Second Land Utilisation Survey.[4]

Perhaps the most basic objective of planning is to ensure the wise use of limited resources; similarly, if we look at conservation, we find that it is a philosophy directed at the manner and timing of resource use. Such closely related aims would suggest that planning and conservation should go hand in hand. The fact that they do not can largely be explained by two observations. First, the statutory planning system is inherently too static in its nature (even after the introduction of structure planning) to readily accommodate the essentially dynamic behaviour of biosystems; and second, the science of ecology has been subjugated by the planner to conform to his concept of amenity, accompanied as it inevitably is by a well-established preservation ethic.

The planner has two principal tools with which to direct the manner and timing of resource use — development plans and development control. Although in their updated versions development plans are less static than the 1947 breed, they still effectively treat land resources as fixed and invariant attributes — only economic and social factors are treated in a dynamic manner, and these only to a limited extent. In development control, the principal criterion for granting planning permission in outline is that of the zoning on the development plan (or in local plans, the policy statement, which in practice will probably prove to be little removed from a colour on a map), thereby perpetuating its fundamentally static nature. In the granting of detailed planning permission the most significant *planning* consideration (as opposed to highway and drainage conditions and so forth) which can be brought to bear on rural matters is amenity. Similarly, tree preservation orders — the planner's main means of control over any specific natural resource — must have amenity as their sole criterion. Thus, "amenity" becomes the heading under which the whole panoply of ecological matters, which may have repercussions on our most vital life-support systems, must be subsumed.

In this manner, the essential nature of the planning process is well suited to the "timeless" image of a serene and unchanging countryside, and is abetted in its superficial treatment of resource dynamics by countryside legislation. Consequently, ecology cannot conformably be integrated with traditional planning practice: it must merely be grafted onto the periphery and remain a secondary issue and, to many planners, even a frivolous one.

At the same time, ecological arguments have generally failed to be accorded a politically respectable pedigree, and are widely considered to be at variance with perceived social welfare objectives. The more far-reaching environmental strategies — although not necessarily more radical than ambitious programmes of welfare redistribution — have lacked the same degree of public acceptance. To understand why, it is necessary to take a brief look at the growth of the environmental movement.

The Historical Basis of Amenity Preservation

Countryside conservation has always been associated in Britain with the supposed benefits of environmental health, pleasantness and civic beauty. In the 17th and 18th centuries, when enlightened foresters and landscape architects first rallied to its defence, the countryside was largely looked upon as a recreation ground for the better-off. The later impulse, which sprang in particular from middle-class repulsion of the worst excesses of the Industrial Revolution, formed part of a more widespread reaction to barbarian establishment attitudes towards culture, economics, social responsibility and the environment. However, as Smith[5] has observed, this led to a view which

> "... simultaneously feared and scorned the effects of urbanisation yet all too obviously benefited from its economic and social advantages."

Such an ambivalent attitude was hardly likely to lead to a penetrating diagnosis:

> "The spatial separation of good and bad in the urban environment and the obvious differences in the appearance of the inner city and outer suburb made it extremely easy for the increasingly influential middle-classes to see the problems primarily in physical terms."

And consequently,

> "The Victorian city believed that the clue to salvation lay in the proper development of sylvan and genteel suburbs within which town and country benefits were to be evenly mixed."

The inevitable outcome was a cosmetic approach to conservation, emphasising the visual amenity of the countryside and playing down its role as a productive but sensitive resource based on photosynthetic growth. Although there was a superficial concern for nature, it showed as little regard for the underlying ecological implications as did vague philanthropy for deep-rooted social problems.

It could be argued that the present "official" concern for the environment is little more than a direct continuation of this. Consider, for instance, the aims of the 1967 Countryside (Scotland) Act[6] as expressed in its long title:

> "An act to make provision for the better *enjoyment* of the Scottish countryside ...",

and again in section 66:

> "... every Minister, government department and public body shall have regard to the desirability of conserving the natural *beauty* and *amenity* of the countryside."

Why has this amenity, consumer-oriented approach been perpetuated at government level, and not been supplanted by a widely accepted, rigorous political analysis, as has occurred in sociology and economics? The answer is obvious: we also all too obviously benefit from the economic and social advantages of despoiling the environment — at least in the short-term. Any bureaucratic response to environmental lobbying will consequently be in the form of an enlightened and philanthropic reaction to our own barbarian values in economics, and the solution will be a cosmetic one — plant a few trees and forget about the fundamental issues.

Making Ecology a Popular Issue

If, by the introduction of ecology into planning, we mean simply the provision of a new jargon in which to dress up well-worn amenity arguments, it is easy to understand why ecology has been reduced to an esoteric, socially divisive and politically unpopular issue. If ecological information is to be thus misused, it becomes clear why environmental matters have been submerged in the development process: it is not that the ecological case is inherently weak, but rather that planners have not yet put forward that case with sufficient seriousness.

In order to improve our present performance, therefore, we must first overcome the basic difficulty of translating ecological information into the planning process. The governmental approach to environmental conservation must change its emphasis from the preservation of amenity to the retention of maximum biological diversity and the rational evaluation and use of natural resources; planning must adapt to a longer-term and less superficial perspective of biotic resources, and even be prepared to let ecologic principles determine the framework of statutory plans.

However, if the ecologist's arguments are to carry political weight, he must be able to demonstrate, using the policies contained in development plans as his evidence, that our present activities are producing an environment which will ultimately become too squalid and unreproductive to provide a decent standard of living. Likewise, economists will only be convinced if it can be shown that the conservation of genetical variety represents economically rational behaviour. It has, for instance, been stated by Barkley and Seckler [5] that:

> "... the basic source of error in income accounts is their failure to reflect the changing values of non-market goods. The benefits of growth are apparent, the costs of growth are insidious."

Conclusion

Ecology appears to have been grafted onto the periphery of planning, to a large extent simply permitting the well-worn concept of amenity to be couched in a more scientific jargon.

The existence of this amenity bias is a major obstacle in the establishment of a truly effective approach to resource conservation, for many well-intentioned politicians and professionals genuinely remain under the impression that our environment is adequately served by present administrative provisions. It is not generally accepted that despite the reform of planning law and practice, despite the addition of executive and advisory functions to the Nature Conservancy Council, despite the creation of a Department of the Environment, we have as yet only scratched the surface of the deep-rooted environmental problems which face us.

It is thus the joint onus upon planners and ecologists to persuade politicians that the current approach to resource planning is an oblique and superficial one. Admittedly, the need for the replacement of amenity criteria by ecological principles will be difficult for those responsible to accept, for the consequences may at first appear to have adverse effects upon our economic and social prosperity. Nevertheless, the necessary evidence to counter this view does exist, and politicians are now becoming increasingly adept at convincing the public of the need to make short-term sacrifices in order to secure long-term benefits. If planners are to protect the environment in other than a purely cosmetic fashion, it must become an accepted fact that, in the long term, our economic and social welfare will be directly dependent upon the general condition of the natural environment.

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